

SCIENTIFIC REVIEW COMMITTEE MEETING

January 22, 2004

MEETING HIGHLIGHTS

SRC Members

Todd Wong (by phone)	Nahid Zoueshtiagh (absent)
Stan Romelczyk (by phone)	Greg Adams (represented by Seong Min)
Katy Wolf	Gary Rubenstein
Hal Taback	Karl Lany
William Dennison (absent)	Steve Simons (represented by Noel Muyco)
Martin Ledwitz	Ted Guth
Anoosheh Mostafaei (absent)	Russell Greenhouse (absent)
Phillip Hodgetts	Ronald Wilkness
Ron Joseph (absent)	

Attendees

Duc Tran (by phone)	Millie Yamada
Gabe Trinidad	Steve Hurlock
John Billheimer	Dale Botts
Viji Sadasivan	Ken Hudson
Jerry Kram	

AQMD Staff

Marty Kay	Alfonso Baez
Howard Lange	John Yee

The handouts and audiotapes can be obtained through the Public Records Section of the Chief Prosecutor's Office. There may be a fee for this service.

Marty Kay welcomed the SRC members and the audience to the meeting. The topics listed below were discussed during the meeting.

- Minutes of November 20th Meeting
- Responses to Comments from November 20th Meeting
- New and Updated BACT - Part B Listings
- Proposed Updates of BACT - Part D (MSBACT) guidelines
- Other Business

Minutes of the November 20th Meeting

A committee member requested the following clarification: on page 3 of the minutes, in the phrase "...with the Rule 1171 limits on the VOC content of blanket and roller washes dropping from 600 to 800 g/l to 100 g/l in July 2005...", the words "600 to 800" should more appropriately be "600 and 800". AQMD staff agreed to make the change. (*Katy Wolf, IRTA; Marty Kay, AQMD*)

Responses to Comments from the November 20th Meeting

AQMD staff stated that changes in the listings presented at the November 20th meeting that had been agreed upon at the meeting, as well as any agreed-upon changes in the minutes from the prior meeting, had been made. Committee and audience members could check the final listings and minutes as posted on AQMD's web site.

At the November 20th meeting, AQMD staff had agreed to investigate and report back to the committee on the following two items:

1. Regarding the new Part B LAER/BACT listing for publication rotogravure printing (Quad Graphics in West Virginia), a committee member had requested that AQMD staff attempt to obtain information on the VOC loading of the air entering the VOC removal system. AQMD staff reported that the information had been obtained and added to the listing. (*Howard Lange, AQMD*)
2. Regarding the proposed update of the Part D guideline for lithographic printing, a committee member had suggested that the vapor pressure limit on blanket and roller washes be deleted as of July 2005, when the washes must comply with a 100 g/l VOC limit (Rule 1171). AQMD staff had discussed this with the permitting team that handles lithographic printing, and the team had agreed to modify the BACT guideline to allow the 100 g/l rule requirement to be met in lieu of the vapor pressure limit. (*Howard Lange, AQMD*)

New BACT Part B, Section I Listings

Fiberglass Impregnation System, Nelco Products (A/N 394320)

In this facility, Nelco Products manufactures resin-impregnated fiberglass cloth, commonly known as “pre-preg”. Pre-preg is an intermediate product that is used in manufacture of printed circuit boards, golf clubs, fishing poles, etc. Fiberglass cloth is drawn through a dip tank containing a resin-solvent mixture and then through an oven for driving off the solvent and partially curing the resin. AQMD staff noted that this equipment is subject to Rule 1128 and suggested that the term “fiberglass impregnation system” should perhaps be changed to “fiber coating system” to be consistent with the rule.

In that Nelco Products had claimed confidentiality in its application for this equipment, only limited information regarding equipment dimensions and process rate was included in the listing. The air flow rate through the oven in part 2 of the listing (4900 cfm) was incorrect and was to be changed. In addition to compliance with Rules 1128 and 1171, the facility meets a permit condition requiring 98% overall control of VOC. Compliance with Rule 1171 is by use of acetone for cleanup. Since the facility uses a resin-solvent mixture with 375 g/l VOC content, which exceeds the 265 g/l maximum in Rule 1128, compliance with Rule 1128 is by the 98% overall VOC control. However, the 98% substantially exceeds the 85.5% required by the rule. The 98% control is achieved by permanent total enclosure of the dip tank and oven and venting to a thermal oxidizer. A source test certified the permanent total enclosure and showed the thermal oxidizer to achieve 99.4% destruction efficiency. (*Marty Kay, AQMD; Howard Lange, AQMD*)

Discussion: A committee member expressed concern with the widespread use of acetone as a cleanup solvent in various plastic-based industries and asked whether there have been any acetone explosions reported. Another committee member responded that fire departments limit the amounts that can be stored and that, to her knowledge, no explosions have occurred. An audience member asked about a statement in part 6 of the listing (Comments) that the oxidizer had failed to meet the 98% destruction efficiency. AQMD staff explained that the statement referred to a previous source test and that the problem had been fixed and the unit retested. AQMD staff agreed to clarify the statement. Another audience member noted that the oxidizer was required to have a minimum temperature of 1400F and asked where that temperature is measured. AQMD staff responded that the temperature is measured at the outlet end of the oxidizer chamber. (*Hal Taback, HTC; Katy Wolf, IRTA; ; Howard Lange, AQMD; Marty Kay, AQMD*)

Gas Turbine, Combined Cycle – Magnolia Power (A/N 386305)

This is a combined cycle power plant consisting of a 181 MW gas turbine with a separately fired heat recovery steam generator and a 147 MW steam turbine. Permit limits are as follows (ppmvd@15%O₂): NO_x-2.0 (3-hr avg.), CO-2.0 (1-hr avg.), VOC-2.0 (1-hr avg.), NH₃-5.0 (1-hr avg.). These limits were considered BACT at the time the Permit to Construct was drafted. The limits were based on 1999 CARB guidance for

power plants and AQMD Part D BACT. The CO limit is, however, more stringent than either of those guidelines and was offered by the applicant. To achieve these emission limits, the gas turbine is equipped with a dry low-NOx burner and the plant includes an SCR and oxidation catalyst. The plant is still under construction. (*Howard Lange, AQMD*)

Discussion: A committee member noted that the Permit to Construct issue dates of this plant and the Vernon plant, to be discussed next, were the same and yet the NOx averaging times were different—3-hr in this case (Magnolia) and 1-hr in the other case (Vernon). AQMD staff explained that the Magnolia permitting process had begun earlier than the Vernon permitting process, and the Vernon permit conditions therefore reflected more recent, and more stringent, BACT. An audience member asked whether BACT for NOx for gas turbines of this type is now 2.0 ppm with a one-hour averaging time. AQMD staff responded that it is. A committee member clarified that this BACT applies to large combined cycle gas turbines and not necessarily to smaller, simple cycle gas turbines. (*Gary Rubenstein, Sierra Research; John Yee, AQMD; Marty Kay, AQMD; Howard Lange, AQMD*)

Gas Turbine, Combined Cycle – Vernon City (A/N 394164)

This power plant consists of two identical combined cycle power trains. Each power train includes a 43 MW gas turbine, separately fired heat recovery steam generator and 55 MW steam turbine. Each gas turbine has a dry low-NOx burner, and each power train includes SCR and oxidation catalyst for additional emission control. Permit limits are as follows (ppmvd@15% O₂): NOx-2.0 (1-hr avg.), CO-2.0 (3-hr avg.), VOC-2.0 (1-hr avg.), NH₃-5.0 (1-hr avg.). These limits were considered BACT at the time the Permit to Construct was drafted. The limits were based on 1999 CARB guidance for power plants and AQMD Part D BACT. The permit conditions also include a monthly mass limit on VOC that is equivalent to 1.2 ppmvd@15% O₂, which was requested by the applicant. (*Howard Lange, AQMD*)

Discussion: Several committee members noted that the 5 ppm ammonia limits on both combined cycle plants has not been achieved in practice and may be difficult to achieve. One committee member asked whether the 5 ppm limit is now BACT for NH₃ for this equipment category and whether AQMD may potentially relax this BACT guideline if it proves to be too difficult to meet. AQMD staff responded that the 5 ppm limit is now considered to be BACT but it can be relaxed if necessary. AQMD staff noted that for low-NOx turbines such as the GE 7FA used in the Magnolia case (6-9 ppm NOx), meeting a 5 ppm NH₃ limit should not be difficult. Committee members responded that meeting the limit may still be difficult because of imperfect mixing and gas sneakage through inadequately sealed spaces between catalyst blocks. A committee member pointed out that large combined cycle plants now frequently have low utilization, and evaluation of achieved-in-practice should consider actual operation time.

A committee member noted that the SCR and oxidation catalyst volumes specified in the two listings, on a comparative basis, seemed inconsistent with the plant sizes. AQMD staff agreed to investigate and correct any erroneous data.

A committee member asked how the monthly mass limit on VOC is enforced. AQMD staff responded that enforcement of that limit will be based on the results of an annual source test and noted that if the 1.2 ppm limit was not met, the plant would simply have to purchase additional offsets. Committee members suggested that since the 1.2 ppm limit is essentially a “soft” limit, it should not be included as BACT. AQMD staff agreed to clarify this in the listing. (*Hal Taback, HTC; Gary Rubenstein, Sierra Research; Ted Guth, Consultant; Karl Lany, SCEC; Marty Kay, AQMD; John Yee, AQMD; Howard Lange, AQMD*)

Gas Turbine, Simple Cycle – El Colton (A/N 406065)

This is a simple cycle gas turbine power plant rated at 48.7 MW. The turbine is equipped with water injection for NO_x control and also with SCR and oxidation catalyst. Permit limits are as follows (ppmvd@15%O₂): NO_x-3.5 (3-hr avg.), CO-6.0 (3-hr avg.), VOC-2.0 (3-hr avg.), NH₃-5.0 (3-hr avg.). These limits were considered BACT at the time the Permit to Construct was drafted. The BACT determination was based on CARB’s guidance for power plants. The 3.5 ppm NO_x limit, however, is lower than the 5 ppm suggested in the CARB guidance, and was offered by the applicant. The unit was source tested and met all permit limits. (*Howard Lange, AQMD*)

Discussion: A committee member suggested that the SCR catalyst design temperature be noted in LAER/BACT listings for simple cycle gas turbines because it is a key parameter affecting what NO_x and NH₃ limits can be met. This committee member noted also that two or three similar (GE LM6000) projects in AQMD jurisdiction with similar limits are not meeting their limits and are under variance. AQMD staff agreed to investigate this and add appropriate information to the listing. Another committee member suggested that AQMD staff also look at the CEMS data and Rule 218 (c) CO data., and AQMD staff agreed to check this information if available. (*Gary Rubenstein, Sierra Research; Karl Lany, SCEC; Marty Kay, AQMD*)

New BACT Part B, Section II Listing

Gas Turbine, Simple Cycle – Lambie Energy Center (BAAQMD A/N 6510)

This 49.9 MW simple cycle power plant was cited in CARB’s report to the legislature on NO_x controls for power plants. The turbine is equipped with SCR and oxidation catalyst. Permit limits are as follows (ppmvd@15%O₂): NO_x-2.5 (3-hr avg.), CO-6.0 (3-hr avg.), VOC-2.0, NH₃-10. These limits were based on CARB guidance for power plants, however, the 2.5 ppm limit on NO_x is more stringent than the 5 ppm limit suggested by the CARB guidance, and was offered by the applicant. The unit has been source tested and met all permit limits. (*Howard Lange, AQMD*)

Discussion: A committee member noted that the mass limit on PM₁₀ emissions in this permit is 3 lb/hr whereas the corresponding limit in the El Colton permit (above) is 11 lb/hr. Another committee member explained that the 3 lb/hr limit is probably based on

the guarantee normally offered with this size turbine, which is based, in turn, on the resolution capability of the test method. Another committee member pointed out that the 11 lb/hr limit is probably based on an old AQMD prohibitory rule.

A committee member requested that AQMD staff add information on catalyst manufacturers, catalyst volumes, guarantees provided by the catalyst system vendor and catalyst design temperatures. AQMD staff agreed to attempt to obtain this information.

A committee member noted that the plant has not accumulated sufficient operation for the concentrations limits to be deemed achieved in practice. AQMD staff agreed that there apparently has not been enough operation but noted that BAAQMD changed their BACT guideline to these limits in July 2003. AQMD staff agreed, however, to hold back the listing until sufficient operating days have been accumulated or a permit is issued with a BACT determination requiring the same limits. Two other committee members noted that the Modesto Electric Generating System (MEGS) project in the San Joaquin valley air district is probably going to have similar limits, but were not sure whether it was a BACT determination or offered by the applicant. The same committee member requested that AQMD staff add information regarding NO_x exceedances mentioned in part 5D2 of the listing—specifically, what were the design errors causing these exceedances. AQMD staff agreed to attempt to obtain this information. *(Ted Guth, Consultant; Gary Rubenstein, Sierra Research; Noel Muyco, Southern California Gas Co.; Karl Lany, SCEC; Howard Lange, AQMD)*

Proposed Updates of Part D (MSBACT) Guidelines

Update of MSBACT for Stationary (Non-Emergency) I.C. Engines Rated at or above 2064 BHP

Current MSBACT guidelines for stationary I.C. engines rated at or above 2064 bhp for NO_x and CO are 21 ppmvd@15%O₂ multiplied by engine efficiency (HHV) divided by 33 and 33 ppmvd@15%O₂, respectively. There is no MSBACT for VOC or NH₃. The new Part B listing of NEO California Power's large stationary engines presented at the September 2003 SRC meeting (16 engines rated at 3870 bhp and approximately 39% efficiency [HHV], started up in 2001) documented permit conditions of 9 ppmvd@15%O₂ NO_x, 56 ppmvd@15%O₂ CO, 25 ppmvd@15%O₂ VOC and 10 ppmvd@15%O₂ NH₃, all of which had been demonstrated in a source test. Based on that case, AQMD proposed to lower the NO_x MSBACT guideline for this equipment category to 9 ppmvd@15%O₂ and add MSBACT for VOC and NH₃ of 25 and 10 ppmvd@15%O₂, respectively. AQMD proposed to leave the MSBACT guideline for CO unchanged since the CO limit in the NEO California Power permit is less stringent than the existing MSBACT guideline. Handouts showing the proposed changes and cost effectiveness calculations were available to all attendees. *(Marty Kay, AQMD)*

Discussion: A committee member suggested that it would be simpler to adjust the guidelines for NO_x, VOC and CO to 0.15, 0.15, 0.6 g/bhp-hr, respectively, to be consistent with the guideline for smaller stationary I.C. engines. AQMD staff responded

that concentration limits are preferable because uncertainty in determining the power level at which an engine is operating makes g/hp-hr limits difficult to enforce. AQMD staff added that applying an efficiency ratio to the ppm guideline is also undesirable because of uncertainty in determining the engine's efficiency (e.g., even the specified full-load efficiency is frequently uncertain because the information available with the engine frequently does not specify LHV or HHV basis). The same committee member expressed concern that a fixed ppm limit based on the NEO engines may be difficult for other engines that are more efficient. AQMD staff responded that the NEO engines have rated efficiency of about 39% (HHV), which is quite high for this type of engine. Another committee member suggested that applying an efficiency ratio would allow a higher ppm limit for more efficient engines. AQMD staff responded that that approach would also make it more difficult for less efficient engines.

A committee member pointed out that the NEO engines do not have CEMS whereas similar engines in the South Coast would be required to have CEMS and it would be more difficult to comply with the emission limits with CEMS monitoring as opposed to annual source testing. AQMD staff responded that two NEO engines, selected by the APCD, had been tested a year after the initial source test and were found to be still in compliance, although the NO_x and CO levels had increased. Another committee member noted that the NEO limits may not be suitable for all similar engines because I.C. engines operate in a wide range of duty cycles.

A committee member asked what was the averaging time associated with the NEO limits. AQMD staff responded that there were no apparent averaging times in the permits, but AQMD would lean toward a 1-hr average. Another committee member expressed concern regarding keeping the MSBACT guideline for CO the same while lowering the NO_x guideline. AQMD staff noted that the CO levels measured in the source test were less than 33 ppmvd@15%O₂ for all engines and pointed out that there should not be a NO_x-CO tradeoff in this case because the emission control technology (SCR and oxidation catalyst) affords independent control of NO_x and CO.

It was agreed that since AQMD did not plan to bring this matter before its Board until June 2004, it could be discussed again at the next meeting. (*Karl Lany, SCEC; Gary Rubenstein, Sierra Research; Marty Kay, AQMD; Howard Lange, AQMD*)

Update of MSBACT for Dry Cleaning; Incinerator—Non-Infectious, Non-Hazardous Waste; Pharmaceutical Manufacturing; Polystyrene Manufacturing

Staff stated that AQMD also planned to update MSBACT guidelines for several other equipment categories including Dry Cleaning, Incinerator—Non-Infectious, Non-Hazardous Waste, Pharmaceutical Manufacturing and Polystyrene Manufacturing. A handout was available to all attendees showing the proposed changes. The proposed changes to the Dry Cleaning and Pharmaceutical Manufacturing guidelines consisted of adding “compliance with Rule 1102” and “compliance with Rule 1103”, respectively. The proposed change in the guideline for Incinerator—Non-Infectious, Non-Hazardous Waste was to delete the words “upon final promulgation of the regulation” from a

footnote that refers to 40 CFR 60, Subpart CCCC since that regulation has now been promulgated. Polystyrene Manufacturing was to be deleted as a separate equipment category and become a subcategory under Resin Manufacturing. (*Marty Kay, AQMD*)

Discussion: Regarding the MSBACT guidelines for Dry Cleaning, a committee member suggested that: (1) the requirement of a refrigerated condenser be deleted from the guideline for petroleum solvent dry cleaning in that AQMD has permitted numerous petroleum solvent dry cleaning systems without refrigerated condensers and (2) the subcategory “Valclene” be deleted in that Valclene is no longer used for dry cleaning. A second committee member agreed that Valclene is probably no longer used for dry cleaning. The first committee member also noted that Valclene is chemically equivalent to “CFC-113” and was banned from production in 1996. AQMD staff agreed to investigate and consider these suggestions. (*Katy Wolf, IRTA; Todd Wong, CARB; Marty Kay, AQMD*)

Other Business

Marty Kay announced that the date of the next meeting would be March 25 and thanked all attendees for their participation.

There was no further discussion, and the meeting was closed.

Attachments